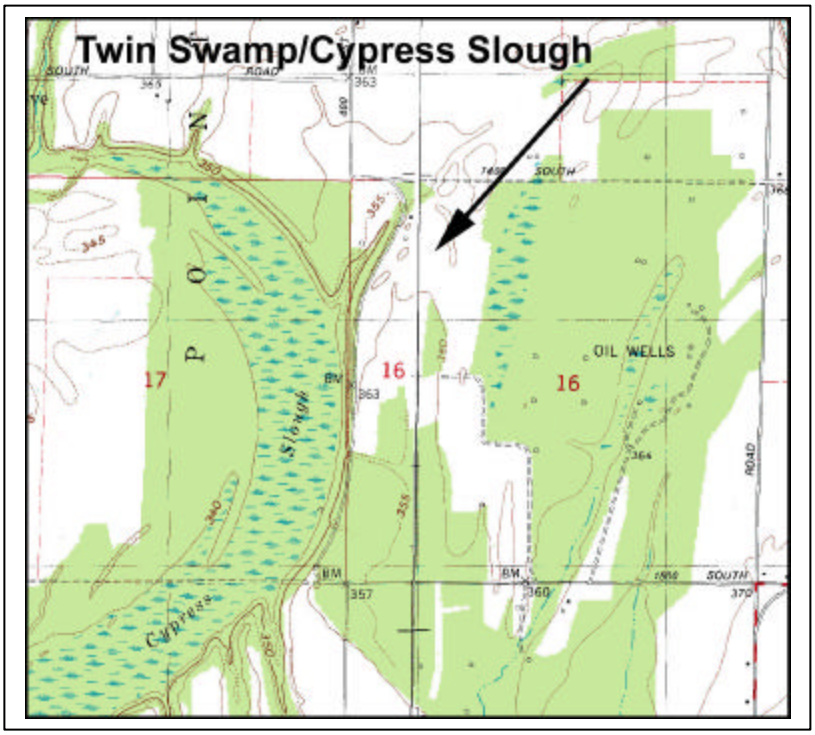
TWIN SWAMP/CYPRESS SLOUGH HABITAT RESTORATION (IN-12)

1.0 Location

The proposed Twin Swamp/Cypress Slough Habitat Restoration project is located Posey County, Indiana. The project area is located between Ohio River miles 835 and 840, and approximately 6 miles northwest of the town of Uniontown, Kentucky. The project site is within the Louisville District, U.S. Army Corps of Engineers (USACE).



2.0 Project Goal, Description, and Rationale

The primary goal of the Twin Swamp/Cypress Slough Habitat Restoration project is the reforestation of the area between Twin Swamp and Big Cypress Slough. Reforestation of the area would create a forested corridor connecting the two properties. Successful reforestation would enhance the habitat for many species of wildlife.

Old field habitat on Twin Swamp area

Wetland habitat in Big Cypress Slough

3.0 Existing Conditions

Terrestrial/Riparian Habitat: The primary terrestrial habitats on the project area were agricultural land and old fields. The old field habitats were dominated by early successional tree species such as green ash (*Fraxinus pennsylvanica*). Some stands of upland timber exist on or near the project area.

Aquatic Habitats: There were no aquatic habitats on the project area.

Wetlands: There were no wetland habitats on the project area, however, the project area is located in between Cypress Slough and Twin Swamp, which both contain jurisdictional wetlands.

Federally-Listed Threatened and Endangered Species: According to the U.S. Fish and Wildlife Service (USFWS), there are 11 federally-listed endangered species and 1 federally-listed threatened species known to occur in Posey County, Indiana. These species are listed on Table 1.

The forested area around Cypress Slough may provide summer roost habitat for the Indiana bat. Preferred tree species would include a mixture of oaks (*Quercus* spp.), silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), and shagbark hickory (*Carya ovata*) (INHS, 1996). Wet areas in Cypress Slough would also provide feeding/foraging habitat for the Indiana bat.

Bald eagles may utilize forested areas for roosting/perching habitat and feed in the open water areas. Although bald eagles are known to nest is Posey County, there are no known eagle nests in the project area.

All of the mussels are freshwater species that typically inhabit medium to large river systems. The mussels are typically found in habitats with substrates that range from silt to gravel, and in water depths from 0.5 to 8.0 meters. These species are generally associated with moderate to fast flowing water. There does not appear to be suitable habitat for these species in the immediate vicinity of the project area.

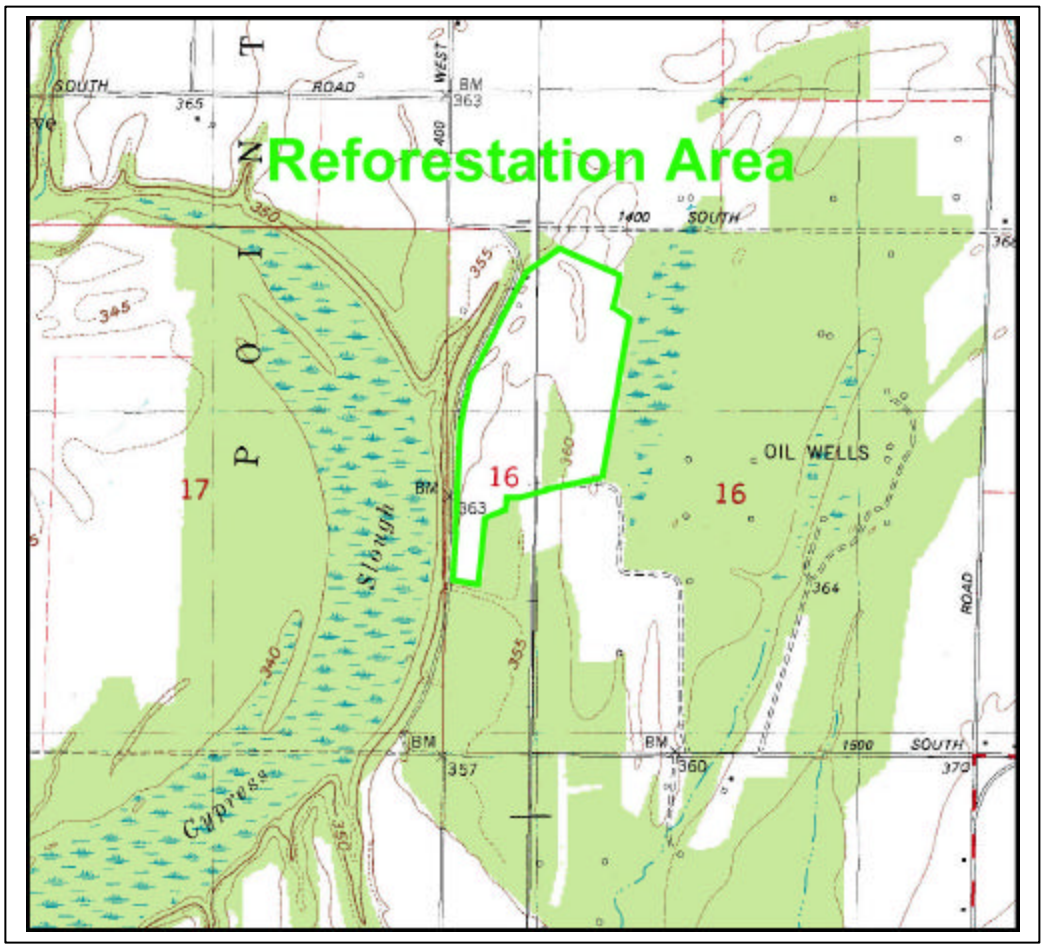
The American burying beetle is generally associated with upland habitats such as grassland prairie, forest edge, and shrubland. It is unlikely that the beetle would be found on the project area.

Table 1. Federally-listed species known to occur in Posey County, Indiana.

Common Name	Scientific Name	Federal Status	Potential Habitat Present
Indiana bat	*Myotis sodalis*	Endangered	Yes
bald eagle	*Haliaeetus leucocephalis*	Threatened	Yes
eastern fanshell pearly mussel	*Cyprogenia stegaria*	Endangered	No
tubercled blossom mussel	*Epioblasma torulosa torulosa*	Endangered	No
pink mucket pearly mussel	*Lampsilis abrupta*	Endangered	No
ring pink mussel	*Obovaria retusa*	Endangered	No
white wartyback mussel	*Plethobasus cicatricosus*	Endangered	No
orange-foot pimpleback mussel	*Plethobasus cooperianus*	Endangered	No
clubshell mussel	*Pleurobema clava*	Endangered	No
rough pigtoe mussel	*Pleurobema plenum*	Endangered	No
fat pocketbook mussel	*Potamilus capax*	Endangered	No
American burying beetle	*Nicrophorus americanus*	Endangered	No

Source: U.S. Fish and Wildlife Service, 1999

4.0 Project Diagram



5.0 Reforestation

Approximately 85 acres would be reforested with native mast producing hardwood trees. Soil types, hydrology, and terrain position would be the primary factors considered when selecting the tree species to be planted, and a detailed planting design should be developed in order to insure that the planting effort is successful. Typical species to be planted in the project area would include cherrybark oak (*Quercus pagodaefolia*), overcup oak (*Quercus lyrata*), pecan (*Carya illinoensis*), bur oak (*Quercus macrocarpa*), and bald cypress (*Taxodium distichum*). Aggressive light mast producing species, such as silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), and/or willows (*Salix* spp), would be expected to regenerate naturally.

- Nursery stock for reforestation would be obtained from a State of Indiana Nursery.
- Bare root seedlings would be used and planted at a rate of 300 trees/acre.

6.0 Cost Estimate (Construction)

Table 2. Reforestation	
Item	**Cost**
Management Plan	$2,000
Reforestation (85 acres)	$18,900
Mobilization	$3,000
TOTAL	**$23,900**

7.0 Schedule

Table 3. Project Schedule	
Item	**Time**
Management Plan	1 Year
Reforestation	1-3 Years
Mobilization	1 Year
TOTAL	**3 Years**

8.0 Expected Ecological Benefits

Terrestrial/Riparian Habitats: Reforestation of the project area would benefit terrestrial and riparian resources. Copperbelly watersnakes occur in the area and would benefit from reforestation. Decreased forest fragmentation in the area would also benefit a number of neotropical migrants.

Aquatic Habitats: Reforestation of the project area would reduce the amount of sediment laden runoff that enters the aquatic resources surrounding the project area.

Wetlands: There would be no foreseeable beneficial impacts to jurisdictional wetlands as a result of implementing the proposed project.

Federally-Listed Threatened and Endangered Species: Reforestation of the project site could potentially benefit the Indiana bat and bald eagle. Successful reforestation would provide potential summer roosting habitat for the Indiana bat, and potential roosting/perching habitat for the bald eagle. There would be no foreseeable beneficial impacts to the federally-listed endangered mussel species or the American burying beetle as a result of implementing the proposed project.

Socioeconomic Resources: Socioeconomic resources in the project area would benefit as a result of implementing the proposed project. Increased recreational opportunities such as hunting and wildlife viewing opportunities would result from the project.

9.0 Potential Adverse Environmental Impacts

Terrestrial/Riparian Habitats: There would be no foreseeable adverse impacts to terrestrial or riparian resources as a result of implementing the proposed project.

Aquatic Habitats: There would be no foreseeable adverse impacts to aquatic resources as a result of implementing the proposed project.

Wetlands: There would be no foreseeable adverse impacts to jurisdictional wetlands as a result of implementing the proposed project.

Federally-Listed Threatened and Endangered Species: There would be no foreseeable adverse impacts to federally-listed threatened or endangered species as a result of implementing the proposed project.

Socioeconomic Resources: There would be a potential for minor adverse socioeconomic impacts. Implementation of the proposed project would take some agricultural lands out of production, which could result in decreased opportunities for tenant farming and decreased farm revenues.

10.0 Mitigation

Minor impacts associated with site reforestation may occur during the implementation of this project, however, no significant adverse impacts are expected. The use of best management practices would minimize any potential impacts. No other mitigation would be necessary for this project.

11.0 Preliminary Operation and Maintenance Costs:

There would be no operation or maintenance costs associated with this project. Evaluation of seedling survival would need to be investigated before additional plantings would be considered.

12.0 Potential Cost Share Sponsor(s)

- Indiana Department of Natural Resources
- Ducks Unlimited
- Wild Turkey Federation
- Private corporations

13.0 Expected Life of the Project

As presently envisioned the Twin Swamp/Cypress Slough Habitat Restoration project area would be managed in perpetuity for the benefit of natural resources by the Indiana Department of Natural Resources.

14.0 Hazardous, Toxic, and Radiological Waste Considerations

Potential impacts of hazardous, toxic, and radiological waste (HTRW) at the site were visually assessed during a site visit. The nearest towns to the project site are Mount Vernon, Indiana at Ohio River mile 830, Hovey, Indiana at Ohio River mile 833 and Uniontown, Kentucky at Ohio River mile 842.

Site Inspection Findings.

The project involves an area of land east of Cypress Slough approximately 1 mile northeast of the mouth of the Wabash river.

The following environmental conditions were considered when conducting the June 29, 1999 project area inspection:

- Suspicious/Unusual Odors;
- Discolored Soil;
- Distressed Vegetation;
- Dirt/Debris Mounds;
- Ground Depressions;
- Oil Staining;
- Above Ground Storage Tanks (ASTs);
- Underground Storage Tanks (USTs);
- Landfills/Wastepiles;
- Impoundments/Lagoons;
- Drum/Container Storage;
- Electrical Transformers;
- Standpipes/Vent pipes;
- Surface Water Discharges;
- Power or Pipelines;
- Mining/Logging; and
- Other.

Oil wells observed during the site inspection are a potential source of hydrocarbon contamination of groundwater from well casings that may have leaked over time. Soils around oil production areas have the potential for contamination from buried drill muds, cuttings at drilling sites, and oily waste/sludges in abandoned production pits.

Other potential contamination could come from water spills at oil/water separators, spills/discharges of sludges, and water from storage tanks. With the exception of oil wells, none of the other environmental conditions listed above were observed on the project area.

15.0 Property Ownership

Selected data on properties immediately adjacent to or within each concept site was collected from the county courthouse of the respective county of each site. Data collected included map and parcel identification number, property owner's name and mailing address, acreage of the potentially affected parcel, and market value of the parcel. This procedure involved obtaining a plat or parcel map of the site and surrounding area which identified each parcel with a corresponding map and parcel number. The map\parcel identification number was subsequently used to determine the property owner's name and mailing address from records in the County Assessor's or County Auditor's office. Plat\parcel maps were collected for each site.

The market value of each parcel as contained in the property tables reflects the assessed valuation to supposedly market value ratio used in each State for taxation purposes. These

assessed values reflect 1998 assessments. The assessed valuation ratio is 33.3 percent for Indiana.

The above ratios were used to approximate the market value of each property. However, in many instances the resultant market value calculated under the above procedure is considerably below the actual value of the land in the real market. Local real estate brokers could provide a more accurate estimate of actual land values.

The collected property data indicate that state owned lands are adjacent to the Twin Swamp/Cypress Slough Habitat Restoration area. No private lands will be needed or disturbed for this project. The majority of the property under consideration is owned by the state Department of Natural Resources.

Table 4. Property Characteristics

Site Name: Twin Swamp/Cypress Slough
Location: Posey County, Indiana

Map/Parcel Number	Owner	Mailing Address	Market Value	Acreage
374/01-01	Indiana Department of Natural Resources	402 West Washington St. Indianapolis, IN 46204	$24,000	80.00
374/01-02 (part)	Indiana Department of Natural Resources	402 West Washington St. Indianapolis, IN 46204		517 (total)

* Denotes improvements on property.

16.0 References

INHS, 1996	Illinois Natural History Survey Reports, March-April 1996. Survey Document #2152. Center for Biodiversity (J. Hofmann).
USFWS, 1999	U.S. Fish and Wildlife Service. Federally endangered, threatened, and proposed species, Indiana.

APPENDIX A Threatened & Endangered Species

APPENDIX B Plan Formulation and Incremental Analysis Checklist

Project Site Location: The proposed Twin Swamp/Cypress Slough Habitat Restoration project is located Posey County, Indiana. The project area is located between Ohio River miles 835 and 840, and approximately 6 miles northwest of the town of Uniontown, Kentucky. The project site is within the Louisville District, U.S. Army Corps of Engineers (USACE).

Description of Plan selected: The primary goal of the Twin Swamp/Cypress Slough Habitat Restoration project is the reforestation of the area between Twin Swamp and Big Cypress Slough. Reforestation of the area would create a forested corridor connecting the two properties. Successful reforestation would enhance the habitat for many species of wildlife.

Alternatives of the Selected Plan:

Smaller Size Plans Possible? Yes and description

Reduce the amount of the reforested area.

Larger Size Plan Possible? Yes and description

Increase the amount of the reforested area and number of trees planted per acre.

Other alternatives? No

Restore/Enhance/Protect Terrestrial Habitats? Yes **Objective numbers met** T4

Restore, Enhance, & Protect Wetlands? No **Objective numbers met**

Restore/Enhance/Protect Aquatic Habitats? No **Objective numbers met**

Type species benefited: Resident and migratory wildlife.

Endangered species benefited: Indiana bat and bald eagle.

Can estimated amount of habitat units be determined: 85 acres would be reforested

Plan acceptable to Resources Agencies?
U.S. Fish & Wildlife Service?
State Department of Natural Resources?

Plan considered complete? Yes **Connected to other plans for restoration?** No

Real Estate owned by State Agency? Yes **Federal Agency?** No
Real Estate privately owned? No
If privately owned, what is status of future acquisition

Does this plan contribute significantly to the ecosystem structure or function requiring restoration? What goal or values does it meet in the Ecosystem Restoration Plan?

Yes This plan increases the amount of forested habitat and habitat diversity.

Is this restoration plan a part of restoration projects planned by other agencies? (i.e. North American Waterfowl Management Plan, etc.)

Unknown

In agencies opinion is the plan the most cost effective plan that can be implemented at this location?

Can this plan be implemented more cost effectively by another agency or institution?
Yes / No
Who:

From an incremental cost basis are there any features in this plan that would make the project more expensive than a typical project of the same nature? For embayment type plans is there excessive haul distance to disposal site? More expensive type disposal? Spoil that requires special handling/disposal?

Potential Project Sponsor:

Government Entity:_____
Non-government Entity _____

Corps Contractor _____Date_____

U.S. Fish & Wildlife Representative _____Date_____

State Agency Representative _____Date _____

U.S. Army Corps of Engineers Representative _____Date _____

Terrestrial Habitat Objectives

T1 Riparian Corridors

T2 Islands

T3 Floodplains

T4 Other unique habitats (canebrakes, river bluffs, etc.)

Wetland Habitat Objectives

W1 Forested Wetlands: Bottomland Hardwoods

W2 Forested Wetlands: Cypress/Tupelo Swamps and other unique forested wetlands

W3 Scrub/Shrub Emergent Wetlands: isolated from the river except during high water and contiguous (includes scrub/shrub wetlands in embayments and island sloughs)

Aquatic Habitat Objectives

A1 Backwaters (sloughs, embayments, oxbows, bayous, etc.)

A2 Riverine submerged and aquatic vegetation

A3 Sand and gravel bars

A4 Riffles/Runs (tailwaters)

A5 Pools (deep water, slow velocity, soft substrate)

A6 Side Channel/Back Channel Habitat

A7 Fish Passage

A8 Riparian Enhancement/Protection

APPENDIX C Micro Computer-Aided Cost Engineering System (MCACES)